

1 ASSIST DEVICE FOR A DOOR HANDLE AND LATCH ASSEMBLY

2
3 BACKGROUND OF THE INVENTION

4 Field of the Invention

5 This invention relates to an assist device which is secured to
6 a pivotally connected, push-pull type handle for operation of a
7 latch assembly of a door in order that the door may be opened by a
8 person without requiring direct hands-on contact of the assist
9 device or handle thereof.

10
11 DESCRIPTION OF THE RELATED ART

12 In today's fast paced society, it is common practice for a
13 person's hands to be completely or at least partially occupied by
14 the support and carrying of a variety of packages, bundles, brief
15 cases, and even smaller objects such as glasses, plates, keys, etc.
16 When the hands of a person are occupied and a person still wishes
17 to pass through a door, considerable time is wasted in the
18 rearranging of the carried packages or bundles or, even more
19 inconveniently, the release or re-positioning of such packages on
20 the floor, ground or other areas.

21 It is of course recognized that certain doors are designed to
22 include handles, locks and/or latch assemblies which are
23 specifically intended to be relatively complicated in order to
24 prevent unauthorized entries. Typical doors, handles, and
25 associated latch assemblies of this type are presently used or

1 installed in association with the primary or more frequently used
2 entrances of a business, dwelling, etc. However, other much more
3 simplified latch assemblies are frequently utilized for doors which
4 are not specifically structured to prevent unauthorized access.

5 More specifically, screen doors are typically used in
6 association with door ways which lead from the interior of a home
7 or like structure out onto a porch, patio, pool area, etc. Such
8 doors are, for the most part, made from webbing or screens
9 surrounded by a metallic or like rigid material door frame. Screen
10 doors of course have as their primary purpose to allow the passage
11 of air flow therethrough as well as allow clear viewing through the
12 screening portion of such doors. Similarly, the handle and latch
13 assemblies of such doors normally do not include a rotationally
14 mounted door knob but rather utilize a relatively inexpensive,
15 light weight, pivotally mounted handle of the "push-pull" type. In
16 opening such doors the handle is generally forced inwardly (or
17 outwardly) to orient the latch assembly associated therewith, into
18 a latch-open position. However, such handles and associated latch
19 assemblies may be particularly difficult to open when, as set forth
20 above, the person's hands are occupied. This is typically the case
21 when one or more people are desirous of bringing plates of foods,
22 beverages, etc. from a kitchen area out to a patio, porch or pool
23 area. Also, when the hands of a person are so occupied, the opening
24 of the screen door or similar structure is frequently accomplished
25 using the hip or other convenient and correspondingly positioned

1 portion of a person's body to "bump" against the handle, in an
2 attempt to force the latch assembly associated therewith, into an
3 open position.

4 However, because of the simplistic design and relatively
5 inexpensive material from which such door handles and associated
6 latch assemblies are structured, their workings are relatively
7 imprecise, at least to the extent that the interacting components
8 which serve to define a latch-open or a latch-closed position do
9 not always operate efficiently or consistently. As a result,
10 manipulation of the aforementioned handle is rendered somewhat
11 difficult and erratic wherein, such erratic operation often
12 increases with age and wear particularly when such devices are
13 frequently exposed to the sometimes harsh environment of the
14 outdoors.

15 Merryman (U.S. Patent No. 6,102,451) shows an assist device
16 that is somewhat "loose" looking (handle in flared part 19 of
17 Fig.3) with projections such as shown by the ends of cotter pin 17
18 (Fig.4).

19 Kwatonowski (U.S. Patent No. 5,769,145) shows a "loose" looking
20 assist device (see parts 7 and 8A of Fig.2) which uses a flat
21 spring 11 at one end.

22 There is a need for an improved device or mechanism, which
23 allows the effective operation of a handle and associated latch
24 structure and thereby facilitates the opening and closing of the
25 door without requiring a person to firmly grip and or even directly

1 contact the handle or the improved assist device itself. Such an
2 improved assist device should be easily, quickly and efficiently
3 connected to an existing door handle without requiring any
4 structural modification thereon, or the door to which it is
5 attached.

6 Such an improved assist device should also be disposed and
7 structured for easy attachment to a handle and have a configuration
8 which facilitates the manipulation of the handle and its latch not
9 only by adults but also by small children who may be of an age
10 which do not totally comprehend the workings of a door handle in
11 terms of improper push-pull or rotary action that must be applied
12 thereto in order to orient the latch of the door between an open or
13 closed position. In the case of extremely small children the latch
14 associated with a screen door or other type of door utilizing such
15 a push-pull handle and latch structure should be capable of being
16 locked in the normal conventional fashion but should also be
17 disposed and configured to allow even children in the toddler age
18 group to manipulate the assist device in order to open the door
19 when it is not intentionally locked.

20 21 SUMMARY OF THE INVENTION

22 The present invention is directed towards an assist device
23 structured to facilitate the opening of a door, particularly, but
24 not exclusively of the screen door type, wherein the door handle
25 and latch assembly associated therewith is selectively positionable

1 between a latch-open and a latch closed position, by the pivotable,
2 "push-pull" action of the handle, normally requiring the
3 utilization of at least one hand of a person. More specifically,
4 the assist device of the present invention is designed to allow
5 manipulation of the handle into a "latch-open" position without
6 requiring direct engagement or manipulation of either the assist
7 device or the handle directly by either of the hands of a person.

8 The assist device of the present invention comprises a bar
9 having an elongated configuration terminating in a proximal end and
10 an oppositely disposed distal end. The bar may be made available in
11 any one of a plurality of different lengths. However, in at least
12 one embodiment of the present invention the length of the bar is
13 such that when in an operative position relative to the door
14 handle, it extends transversely across substantially the entire
15 width of the door.

16 The proximal end of the bar interacts with the handle. The
17 distal end of the bar is secured to a brace member and/or a spaced
18 apart portion of the door itself in order that the elongated bar is
19 movably supported on the door at both its proximal and distal ends.
20 This type of support facilitates the application or exertion of a
21 force on the bar, utilizing the hips, upper thighs, or any other
22 convenient and appropriate portion of a person's body. The
23 appropriate force is typically demonstrated by exerting an inward
24 push on the bar in order that the handle is positioned or
25 orientated so as to move the associated latch assembly into the

1 required "latch-open" position. Further, the movable yet secured
2 support and/or attachment of the bar to the door, in the manner
3 described above, allows an inwardly or other appropriately directed
4 force to be exerted at any of a plurality of locations along the
5 length of the bar and thereby effectively manipulate the handle,
6 into the aforementioned latch-open position.

7 As set forth above, at least one embodiment of the present
8 invention includes the length of the bar being sufficient to extend
9 substantially across the entire width of the door and in generally
10 perpendicular or otherwise transverse relation to the length of the
11 door. In at least one alternate embodiment of the present
12 invention, the bar may have a length somewhat less than the width
13 of the door. In this embodiment the distal end of the bar is
14 connected to either a brace member and/or to a portion of the door
15 itself in a manner that allows at least minimal movement of the
16 distal end relative to the door when an applicable force is
17 supplied to the bar in an attempt to position the handle and the
18 associated latch assembly into the aforementioned latch-open
19 position. Therefore, regardless of the length of the bar a force
20 may be applied thereto at almost any of a plurality of points or
21 locations along its length in order to force the handle into the
22 latch-open position.

23 The conventional structuring of the handle and its
24 conventional, associated latch assembly is such that the handle
25 will be biased outwardly back into the latch-closed position, when

1 the force or pressure is released from the bar. Therefore a mere
2 "bump" need only be exerted on an exposed, outer portion of the bar
3 in order that the handle be forced or pivoted inwardly into the
4 latch-open position.

5 Other features associated with the assist device of the
6 present invention is the simple and easy attachment of the bar to
7 the handle and other portions of the door. In addition, such
8 attachment or mounting of the bar to the handle, in the manner set
9 forth above, does not interfere with a conventional operation of
10 the handle and associated latch assembly, particularly relating to
11 the ability to selectively lock or unlock the door, as desired.
12 This will allow the conventional door handle and associated latch
13 to be locked or unlocked as an added safety measure, so as to
14 prevent small children from passing through the door, unattended.
15 However, the location and configuration of the bar when mounted in
16 its operative position on the handle and door, facilitates use by
17 adults and children alike in order that passage through the
18 opening, with which the door is associated, is greatly facilitated.

19 In a preferred embodiment of the invention, illustrated in
20 Figures 8-11, the synergistic interaction of a pivot piece, u-
21 shaped bracket (with a pivot pin) and bar produces an attractive,
22 easy to assemble and sturdy assist device with no sharp projecting
23 parts.

24
25 BRIEF DESCRIPTION OF THE DRAWINGS

1 For a fuller understanding of the nature of the present
2 invention, reference should be had to the following detailed
3 description taken in connection with the accompanying drawings in
4 which:

5 Figure 1 is a perspective view of the assist device including
6 a bar mounted on one face of the door and connected to a
7 conventional door handle.

8 Figure 2 is a perspective view of another embodiment of the
9 assist device of the present invention.

10 Figure 3 is a top interior view partial cut away of the
11 attachment of the bar to a conventional handle.

12 Figure 4 is a perspective view of one embodiment of the
13 present invention, wherein the opposite end of the bar is supported
14 on the door or an associated brace member.

15 Figure 5 is a front view of the embodiment of Figure 4.

16 Figure 6 is a top view in partial phantom and cutaway of the
17 embodiment of Figures 4 and 5.

18 Figure 7 is an end view of a proximal open end of the bar of
19 the present invention.

20 Figure 8 is a perspective view of the door handle with the
21 pivot piece apart from the bar.

22 Figure 9 is a partial view of Figure 8 showing the pivot piece
23 snugly received in the bar.

1 Figure 10 is a perspective view of the bar with the pivot pin
2 therein, both apart from the u-shaped bracket which is sturdily
3 mounted on the door support.

4 Figure 11 is a perspective view showing the bar snugly
5 received in the u-shaped bracket.

6 Like reference numerals refer to like parts throughout the
7 several views of the drawings.

8 9 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

10 As shown in the accompanying Figures, the present invention is
11 directed to an assist device generally indicated as 10 which is
12 designed and structured to efficiently position a door handle,
13 generally indicated as 12, and an associated latch assembly (not
14 shown for purposes of clarity) on a screen door or similar type of
15 closure structure, generally indicated as 14. The door handle 12 is
16 of the type that is generally pivotally connected to the frame of
17 the door 14 and is conventionally designed to be a "push-pull" type
18 of handle normally requiring the gripping thereof by at least a
19 single hand of a person passing through the door opening.

20 More specifically, the assist device 10 of the present
21 invention comprises an elongated bar 16 which preferably, but not
22 exclusively comprises a tubular construction as best shown in
23 Figure 7. The bar 16 includes a proximal end generally indicated as
24 18 and a distal end generally indicated as 20. The bar 16 is formed
25 from a rigid material and in at least one embodiment, has a length

1 sufficient to extend substantially across the entire width of the
2 door 14 and in transverse or even perpendicular relation to the
3 length thereof. Obviously, the specific orientation of the bar, in
4 terms of its transverse positioning relative to the length of the
5 door 14, can vary. However, the bar should be conveniently disposed
6 to allow manipulation of the handle 12, by persons of all ages and
7 sizes, without requiring hands-on contact or engagement directly
8 with the bar 16, as will be explained in greater detail
9 hereinafter. With reference to Figure 2, it is apparent that the
10 length of the bar, indicated as 16', may vary and may extend
11 transversely across the door 14 at a location which is generally
12 less than the entire width of the door 14.

13 In either the embodiment of Figures 1 and 2, the bar 16 and
14 /or 16' has its proximal end 18 interacting with handle 12. With
15 reference to Figures 3 and 7, the bar 16 and/or 16' may include an
16 open proximal end 18, whether or not the entire length of the bar
17 16 is tubular or not. However, as shown in Figure 3, the open,
18 proximal end is sufficiently dimensioned to receive a free end 12'
19 of the handle 12 at least partially into the interior of the bar 16
20 or 16'. Further, a connecting tab or link as at 21 may be secured
21 both to the proximal end 18 of the bar and to handle 12 by
22 connectors 22.

23 The opposite or distal end 20 of the bar 16, 16' is
24 interconnected to the door 14 in supported relation thereon. More
25 specifically, in the embodiment of Figure 1, wherein the bar 16 has

1 a length sufficient to extend substantially across the entire width
2 of the door 14, the distal end 20 may be connected to a brace
3 member 24, which in turn may be attached or mounted on a
4 correspondingly positioned portion or frame of the door 14 as at
5 14'. In the embodiment of Figure 2, the length of bar 16' extends
6 only partially across the width of the door 14. In this embodiment
7 a supplementary brace member as at 26 is utilized to support and
8 interconnect the distal end 20 of the bar 16 to the door 14. It
9 should be further noted that in either of the embodiments of
10 Figures 1 and 2 the brace member may be defined directly by a door
11 frame 14' or another appropriately positioned portion of the door
12 14, depending upon the overall design and structure of the door 14.

13 In either embodiment, however, both the proximal end 14 and
14 the distal end 20 are attached and/or interconnected in generally
15 supporting relation on the door 14. With further regard to the
16 proximal end 18, it interacts with the handle so as to move
17 therewith when an inwardly directed force or pushing is exerted on
18 the outer, exposed portion of the bar 16, whether or not such force
19 is exerted thereon by the hand or other conveniently located
20 portion of a person's body, such as the hip, upper thigh, etc.

21 With reference to Figures 4 through 6, the distal end 20 is
22 pivotally or otherwise movably secured to either the brace member
23 24, 26 and/or to a portion of the door or door frame 14' by means of
24 a connector generally indicated as 28. In one embodiment of the
25 present invention, the connector 28 includes a u-shaped bracket 30

1 having a connecting pin, bolt or like elongated member 32, passing
2 through the proximal end 20 of the bar 16. By virtue of this
3 supported connection of the distal end 20 onto the door 14,14' or
4 brace member 24,26, the bar 16,16' is allowed to at least minimally
5 pivot, as indicated by the directional arrows of Figure 6 as the
6 bar 16,16' is forced inwardly towards the face of the door 14, so
7 as to orient the handle 12 in a latch-open position. In the top
8 view of Figure 6, directional arrow 40 represents at least a
9 minimal pivotal movement of the bar 16, as an inwardly directed
10 force is applied to the bar 16 in order to move the handle 12 and
11 its associated latch assembly into the aforementioned latch-open
12 position. Similarly, the normal and conventional structural
13 operation of the handle 12 and its associated latch assembly are
14 structure to be normally biased outwardly into a latch closed
15 position, wherein the bar 16 will pivot at least minimally outward
16 in accordance with the directional arrow 41.

17 By virtue of this construction, the assist device 10
18 comprising the bar 16 or 16' is orientated so as to facilitate
19 orientation of the handle 12 into a latch-open position, without
20 requiring the direct contact by the hands of the person. This
21 thereby facilitates opening of the door 14, such as when the
22 person's hands are occupied. Also children may more easily open a
23 door 14 equipped with the assist device 10 in that small children
24 frequently do not have the manual dexterity to properly or at least
25 efficiently manipulate a conventional handle structure 12, of the

1 type described. However, it should be emphasized that the assist
2 device 10 is structured to allow locking of the handle and/or
3 associated latch assembly in the conventional manner in order to
4 prevent opening of the door by small children, when such is
5 desired.

6 A preferred embodiment of the invention is shown in Figures 8-
7 11 of the drawings. The door handle 12 (Figure 8) is provided with
8 a pivot piece 50 sturdily attached thereto with a pair of nuts and
9 bolts 52. The pivot piece 50 does not extend completely across the
10 width of handle 12 and hence when in place leaves shoulders 51 on
11 handle 12. In this embodiment, the pivot piece is a flat
12 rectangular piece about $1 \frac{7}{8}$ inches long by about $\frac{5}{8}$ inches wide;
13 and projects about $\frac{7}{8}$ inches from the end of the handle. The pivot
14 piece is about $\frac{1}{16}$ inches thick. As shown in Figure 9, the pivot
15 piece is inserted into bar 16 to form a tight, attractive fit with
16 the end of the bar in close proximity to the shoulders. The bar is
17 a hollow tube with a square cross-sectional shape and a wall
18 thickness of about $\frac{1}{16}$ inch, and having about $\frac{3}{4}$ inch sides.

19 Figure 11 shows the other end of bar 16 attached to u-shaped
20 bracket 30 by pivot pin 32. Bracket 30 and pivot pin 32 are
21 selected to add attractiveness and stability to the assist device.
22 Pivot pin 32 consists of a long inside threaded bolt about one inch
23 long with an outside diameter of about $\frac{3}{16}$ inch; and a short
24 outside threaded bolt about $\frac{3}{8}$ inches long with an outside
25 diameter of about $\frac{1}{8}$ inches. The short bolt is screwed into the

1 large bolt. Either or both bolts have screwdriver slots as shown
2 in Figure 11.

3 Figure 11 further shows the tight and attractive fit of bar 16
4 secured to bracket 30 by pivot pin 32. The bracket is about $1 \frac{3}{4}$
5 inches long and about $1 \frac{1}{8}$ inches high. It is noteworthy that the
6 holes in the bar receiving the pivot pin bolts are not at a point
7 halfway up the bar sides. Rather, the hole centers are about $\frac{1}{4}$
8 inch from the top of the bar, and pass through the top part of the
9 bracket. Hence the part of the bar near the pivot pin fits snugly
10 and attractively within the bracket. The tops of the bracket sides
11 project slightly above the top of the bar as shown in Fig.11. It is
12 surprising that a "pivoting" bar can have such tight, sturdy and
13 attractive supports.

14 The bar, pivot piece and u-shaped bracket can be made from
15 various metals, plastic and woods. Aluminum is the preferred
16 material.

17 Figure 10 shows the sturdy attachment of the bracket 30 to the
18 door support using as least two screws.

19 Figure 8 shows the protruding pivot piece 50 before its
20 insertion into bar 16.

21 Figure 9 shows the bar 16 in close proximity to shoulders 51
22 after insertion of the pivot piece into the bar.

23 Since many modifications, variations and changes in detail can
24 be made to the described preferred embodiments of the invention, it
25 is intended that all matters in the foregoing description and shown

1 in the accompanying drawings be interpreted as illustrative and not
2 in a limiting sense. Thus the scope of the invention should be
3 determined by the appended claims and their legal equivalents.
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